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SHARON, AYAL I	

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DATE MAILED: 02/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/888,261	NIKOLSKIY ET AL.	
	Examiner	Art Unit	
	Ayal I Sharon	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 June 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/13/04, 5/2/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. Claims 1-41 of U.S. Application 09/888,261 filed on 06/21/2001 are presented for examination.

Double Patenting

2. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

   A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

3. The following paragraph in bold font is a summary of the claim rejections. The detailed rejections follow.

4. **Claims 9-11 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1 and 9-10 of prior U.S. Patent No. 6,633,789. This is a double patenting rejection.**

5. Claim 9 is rejected under 35 U.S.C. 101 as claiming the same invention as that of claim 1 of prior U.S. Patent No. 6,633,789. This is a double patenting rejection.

Insert heading

6. Claims 10-11 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 9-10 of prior U.S. Patent No. 6,633,789.

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. **Claims 2-8 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 2-8 of U.S. Patent No. 6,633,789.**

9. Although the conflicting claims are not identical, they are not patentably distinct from each other because the limitations of claims 2-8 in the application (not including the limitations of independent claim 1 in the application) are identical to the limitations of claims 2-8 in the issued patent (not including the limitations of independent claim 1 in the patent).

10. Moreover, the independent claim 1 in the application, from which claims 2-8 in the application depend, is broader than the independent claim 1 in the patent from which claims 2-8 in the issued patent depend.

11. Therefore, the claims in the application are broader than the claims in the patent, so every feature claimed in the application is taught by the patented claims and therefore is obvious.

12. **Claims 12-20 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 11-19 of U.S. Patent No. 6,633,789.**

13. Although the conflicting claims are not identical, they are not patentably distinct from each other because the limitations of claims 12-20 in the application (not including the limitations of independent claim 1 in the application) are identical to the limitations of claims 11-19 in the issued patent (not including the limitations of independent claim 1 in the patent).

14. Moreover, the independent claim 1 in the application, from which claims 12-20 in the application depend, is broader than the independent claim 1 in the patent from which claims 11-19 in the issued patent depend.

15. Therefore, the claims in the application are broader than the claims in the patent, so every feature claimed in the application is taught by the patented claims and therefore is obvious.

Claim Rejections - 35 USC § 112

16. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

17. Claims 23-37 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claims refer to differing file sizes, however, there is no disclosure in the specification of an apparatus or method that would enable the creation of such files of predetermined sizes.

18. Claims 38-39 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 38 and 39 recite models comprising "at least five teeth" and "at least ten teeth" respectively. However, there is no disclosure in the specification of an apparatus or method that sets a minimum threshold for the number of teeth in a model.

Claim Rejections - 35 USC § 102

19. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

20. The prior art used for these rejections is as follows:

21. Andreiko et al., U.S. Patent 5,696,955. (Henceforth referred to as "**Andreiko**").

22. The claim rejections are hereby summarized for Applicant's convenience. The detailed rejections follow.

23. Claims 1-5, 13-15, and 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Andreiko.

24. In regards to Claim 1, Andreiko teaches the following limitations:

1. A computer-implemented method for generating a computer model of one or more teeth, comprising:

receiving as input a digital data set of meshes representing the teeth;

selecting a curved coordinate system with mappings to and from a 3D space;

and

generating a function in the curved coordinate system to represent each tooth.

Andreiko teaches the following (see col.14, line 66 – col.15, line 15):

> The input information 26 is, in some embodiments of the invention, input as a full three dimensional image, and then simplified by reducing it to a plurality of curves in a plurality of differently oriented planes or fairly flat curved surfaces, each defined in the independent X-Y coordinate system of the respective surface or plane. In subsequent analysis, these planes are oriented, translated and rescaled with respect to each other in arriving at a derivation of the ideal finish positions of the teeth and the design of the custom appliance 25. In accordance with the preferred embodiment of the invention, curves and points on the contours of the jaw and teeth of the patient 12 are expressed in terms of accepted or generally applicable orthodontic parameters so that manual and automated decision making can combine and coordinate the best of orthodontic knowledge and experience with the efficiency and precision of computer analysis to minimize the use of the orthodontist's time, shorten the patient's treatment period and optimize the final treatment result.

25. In regards to Claim 2, Andreiko teaches the following limitations:

2. The method of claim 1, further comprising displaying the computer model of the teeth using the function and the coordinate system.

Andreiko teaches the following (see col.14, line 66 – col.15, line 15):

> In accordance with the preferred embodiment of the invention, curves and points on the contours of the jaw and teeth of the patient 12 are expressed in terms of accepted or generally applicable orthodontic parameters so that manual and automated decision making can combine and coordinate the best of orthodontic knowledge and experience with the efficiency and precision of computer analysis to minimize the use of the orthodontist's time, shorten the patient's treatment period and optimize the final treatment result.

26. In regards to Claim 3, Andreiko teaches the following limitations:

> 3. The method of claim 1, further comprising storing a compact coordinate system description and the function in a file representing a compressed version of the digital data set.

Andreiko teaches the following (see col.14, line 66 – col.15, line 15):

> The input information 26 is, in some embodiments of the invention, input as a full three dimensional image, and then simplified by reducing it to a plurality of curves in a plurality of differently oriented planes or fairly flat curved surfaces, each defined in the independent X-Y coordinate system of the respective surface or plane.

27. In regards to Claim 4, Andreiko teaches the following limitations:

> 4. The method of claim 3, further comprising transmitting the file to a remote computer.

(Andreiko, especially: see col.12, lines 48-64; and Fig.1, Items 30a, 30b, 30c)

Andreiko teaches that:

> Where the inputting, design and manufacture are performed at the appliance facility 13, the computers 30a, 30b and 30c may be the same computer 30.

28. In regards to Claim 5, Andreiko teaches the following limitations:

> 5. The method of claim 4, further comprising displaying the computer model of the teeth using the function at the remote computer.

Andreiko teaches the following (see col.12, lines 48-64; and Fig.1, Items 30a, 30b, 30c):

> In such cases, one of the primary functions of the operators 28 is to input digital information 26 from the records 16 into a computer 30a. Another

> function is to operate the same or another computer 30b to design the custom appliance 25, and to operate NC equipment 38 controlled by one of the same or another computer 30c to manufacture the appliance 25. Where the inputting, design and manufacture are performed at the appliance facility 13, the computers 30a, 30b and 30c may be the same computer 30.

Andreiko teaches the following (see col.17, lines 60-65):

> With the curves such as the profile PF so formed, an operator can, with the use of the pointing device 47, select, by positioning the cursor on the formed profile on the screen 35, point parameters of the tooth, the coordinates of which can be thereby input digitally into the computer 30.

29. In regards to Claim 13, Andreiko teaches the following limitations:

> 13. The method of claim 1, further comprising receiving an instruction from a human user to modify the graphical representation of the teeth and modifying the graphical representation in response to the instruction.

Andreiko teaches the following (see col.14, line 66 – col.15, line 15):

> In subsequent analysis, these planes are oriented, translated and rescaled with respect to each other in arriving at a derivation of the ideal finish positions of the teeth and the design of the custom appliance 25.

Andreiko teaches the following (see col.17, lines 60-65):

> With the curves such as the profile PF so formed, an operator can, with the use of the pointing device 47, select, by positioning the cursor on the formed profile on the screen 35, point parameters of the tooth, the coordinates of which can be thereby input digitally into the computer 30.

30. In regards to Claim 14, Andreiko teaches the following limitations:

> 14. The method of claim 13, further comprising modifying the selected data set in response to the instruction from the user.

Andreiko teaches the following (see col.14, line 66 – col.15, line 15):

> In subsequent analysis, these planes are oriented, translated and rescaled with respect to each other in arriving at a derivation of the ideal finish positions of the teeth and the design of the custom appliance 25.

Andreiko teaches the following (see col.17, lines 60-65):

> With the curves such as the profile PF so formed, an operator can, with the use of the pointing device 47, select, by positioning the cursor on the formed profile on the screen 35, point parameters of the tooth, the coordinates of which can be thereby input digitally into the computer 30.

31. In regards to Claim 15, Andreiko teaches the following limitations:

> 15. The method of claim 13, further comprising allowing a human user to select a tooth in the graphical representation and, in response, displaying information about the tooth.

Andreiko teaches the following (see col.17, lines 60-65):

> With the curves such as the profile PF so formed, an operator can, with the use of the pointing device 47, select, by positioning the cursor on the formed profile on the screen 35, point parameters of the tooth, the coordinates of which can be thereby input digitally into the computer 30.

32. In regards to Claim 18, Andreiko teaches the following limitations:

> 18. The method of claim 13, wherein rendering the graphical representation comprises downloading data to a remote computer at which a human view wishes to view the graphical representation.

Andreiko teaches the following (see col.14, line 66 – col.15, line 15):

> In subsequent analysis, these planes are oriented, translated and rescaled with respect to each other in arriving at a derivation of the ideal finish positions of the teeth and the design of the custom appliance 25.

Andreiko also teaches the following (see col.12, lines 48-64; and Fig.1, Items 30a, 30b, 30c):

> In such cases, one of the primary functions of the operators 28 is to input digital information 26 from the records 16 into a computer 30a. Another function is to operate the same or another computer 30b to design the custom appliance 25, and to operate NC equipment 38 controlled by one of the same or another computer 30c to manufacture the appliance 25. Where the inputting, design and manufacture are performed at the appliance facility 13, the computers 30a, 30b and 30c may be the same computer 30.

33. In regards to Claim 19, Andreiko teaches the following limitations:

> 19. The method of claim 1, further comprising delivering data representing the positions of the teeth at selected points along the treatment paths to an appliance fabrication system for use in fabricating at least one orthodontic appliance structured to move

the teeth toward the final positions.

Andreiko teaches the following (see col.14, line 66 – col.15, line 15):

> In subsequent analysis, these planes are oriented, translated and rescaled with respect to each other in arriving at a derivation of the ideal finish positions of the teeth and the design of the custom appliance 25.

Andreiko also teaches the following (see col.12, lines 48-64; and Fig.1, Items 30a, 30b, 30c):

> In such cases, one of the primary functions of the operators 28 is to input digital information 26 from the records 16 into a computer 30a. Another function is to operate the same or another computer 30b to design the custom appliance 25, and to operate NC equipment 38 controlled by one of the same or another computer 30c to manufacture the appliance 25. Where the inputting, design and manufacture are performed at the appliance facility 13, the computers 30a, 30b and 30c may be the same computer 30.

34. In regards to Claim 20, Andreiko teaches the following limitations:

> 20. The method of claim 1, further comprising detecting teeth collision using the curved coordinate system.

Andreiko teaches the following (see col.24, lines 19-31):

> A minimum number of points on the tooth profiles are selected that are sufficient for determining the contact points between teeth that are relevant to finish tooth position calculation and appliance design. These points are selected such that the calculations made from them are relatively insensitive to measurement errors in the input of the data in step (500). From the selected points, for each tooth, other parameters are derived, including an incisal center point ICP, a gingival center point GCP and the crown long axis CLA through the ICP and GCP, as explained below in connection with step (600) and FIG. 6 et seq.

Examiner finds that teeth collision detection is inherent to this process of determining contact points between teeth.

Claim Rejections - 35 USC § 103

35. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

36. The prior art used for these rejections is as follows:

37. Andreiko et al., U.S. Patent 5,696,955. (Henceforth referred to as "**Andreiko**").

38. Bourke, Paul. "Coordinate System Transformation". June 1996. (Henceforth referred to as "**Bourke**").

39. The claim rejections are hereby summarized for Applicant's convenience. The detailed rejections follow.

40. **Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andreiko in view of Official Notice.**

41. In regards to Claim 6, Andreiko does not expressly teach the following limitation:

> 6. The method of claim 4, wherein the file is transmitted over a network.

Official Notice is given that it was old and well known at the time the invention was made to exchange files between computers via a network.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Andreiko with Official Notice, because doing so would facilitate sharing the files between different computers.

42. In regards to Claim 7, Andreiko teaches the following limitations:

> 7.The method of claim 6, wherein the network is a wide area network.

Official Notice is given that it was old and well known at the time the invention was made to exchange files between computers via a wide area network (WAN).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Andreiko with Official Notice, because doing so would facilitate sharing the files between different computers.

43. In regards to Claim 8, Andreiko teaches the following limitations:

8. The method of claim 6, wherein the network is the Internet.

Official Notice is given that it was old and well known at the time the invention was made to exchange files between computers via the internet.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Andreiko with Official Notice, because doing so would facilitate sharing the files between different computers.

44. Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andreiko in view of Bourke.

45. In regards to Claim 9, Andreiko teaches the following (see col.14, line 66 – col.15, line 15):

> The input information 26 is, in some embodiments of the invention, input as a full three dimensional image, and then simplified by reducing it to a plurality of curves in a plurality of differently oriented planes or fairly flat curved surfaces, each defined in the independent X-Y coordinate system of the respective surface or plane.
>
> However, Andreiko does not expressly teach use of the specific

coordinate system claimed in the following limitation:

9. The method of claim 1, wherein the coordinate system is based on the following equation:
$V = P(\phi, \theta) + R * Direction(\phi, \theta)$

where V is the corresponding point in three-dimensional (3D) space to (ϕ, θ, r),
P and Direction are a vector functions expressed in terms of ϕ and θ.

Bourke, on the other hand, expressly teaches the use of a "spherical" / "polar" coordinate system in which a 3D coordinate space is defined by the following 3 parameters: ϕ, θ, and R.

The claimed formula {V = P(ϕ, θ) + R * Direction(ϕ, θ)} is inherent to the spherical coordinate system because it is the representation of a vector in terms of angle {P(ϕ, θ) } and magnitude {R * Direction(ϕ, θ)}.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Andreiko with those of Bourke, because Bourke expressly teaches that "There are three prevalant coordinate systems for describing geometry in 3 space: cartesian, cylindrical, and spherical (polar)."

46. In regards to Claim 10, Andreiko teaches the following limitations:

10. The method of claim 9, wherein the P and Direction functions are selected to minimize the deviation between the tooth model and a parametric surface specified by the curved coordinate system and the function.

"In subsequent analysis, these planes are oriented, translated and rescaled with respect to each other in arriving at a derivation of the ideal finish positions of the teeth and the design of the custom appliance 25."
(see Andreiko: col.14, line 66 – col.15, line 15)

47. In regards to Claim 11,

11. The method of claim 9, wherein P and Direction are different for incisors and molars.

It is inherent that incisors and molars have different locations, and therefore different coordinates, in a visual display of teeth in the mouth.

48. In regards to Claim 12, Andreiko teaches the following (see col.14, line 66 – col.15, line 15):

> The input information 26 is, in some embodiments of the invention, input as a full three dimensional image, and then simplified by reducing it to a plurality of curves in a plurality of differently oriented planes or fairly flat curved surfaces …

However, Andreiko does not expressly teach the claimed limitations:

> 12. The method of claim 1, further comprising determining a radius value.

Bourke, on the other hand, expressly teaches the use of a "spherical" / "polar" coordinate system in which a 3D coordinate space is defined by the following 3 parameters: ϕ, θ, and R. Examiner interprets that "R" corresponds to applicants' claimed "radius".

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Andreiko with those of Bourke, because Bourke expressly teaches that "There are three prevalant coordinate systems for describing geometry in 3 space: cartesian, cylindrical, and spherical (polar)."

49. Claims 21-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andreiko in view of Official Notice.

50. In regards to Claim 21, Andreiko teaches the following limitations:

> 21. A computer-implemented method for communicating information on one or more teeth, comprising:
> providing a digital tooth model;
> compressing the digital tooth model; and
> (Andreiko, especially: see col.14, line 66 – col.15, line 15):

However, while Andreiko also teaches the use of three different computers that communicate with one another, (see col.12, lines 48-64; and Fig.1, Items

30a, 30b, 30c), Andreiko does not expressly teach that they communicate via a network, as in the following limitation:

communicating the digital tooth model over a network.

Official Notice is given that it was old and well known at the time the invention was made to exchange files between computers via a network.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Andreiko with Official Notice, because doing so would facilitate sharing the files between different computers.

51. In regards to Claim 22, Andreiko teaches the following limitations:

22. The method of claim 21, wherein the compressing the digital model further comprises:
selecting a curved coordinate system with mappings to and from a 3D space; and
generating a function in the curved coordinate system to represent each tooth.

Andreiko teaches the following (see col.14, line 66 – col.15, line 15):

> The input information 26 is, in some embodiments of the invention, input as a full three dimensional image, and then simplified by reducing it to a plurality of curves in a plurality of differently oriented planes or fairly flat curved surfaces, each defined in the independent X-Y coordinate system of the respective surface or plane. In subsequent analysis, these planes are oriented, translated and rescaled with respect to each other in arriving at a derivation of the ideal finish positions of the teeth and the design of the custom appliance 25. In accordance with the preferred embodiment of the invention, curves and points on the contours of the jaw and teeth of the patient 12 are expressed in terms of accepted or generally applicable orthodontic parameters so that manual and automated decision making can combine and coordinate the best of orthodontic knowledge and experience with the efficiency and precision of computer analysis to minimize the use of the orthodontist's time, shorten the patient's treatment period and optimize the final treatment result.

52. Claims 23-36 all claim following limitations, differing only in the claimed size of the generated file:

The method of claim 21, wherein the compressing the digital model generates a file that is … in size.

Andreiko teaches the compression of the input data as follows (see col.14, line 66 – col.15, line 15):

> The input information 26 is, in some embodiments of the invention, input as a full three dimensional image, and then simplified by reducing it to a plurality of curves in a plurality of differently oriented planes or fairly flat curved surfaces, ….

However, Andreiko does not expressly teach the size of the generated files. Official Notice is given that it is old and well known in the art that files come in various sizes.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Andreiko with those of Official Notice, because the size of a file varies with the amount of data in it. In the specific case of Andreiko, the size of a file contailing a dental representation would depend on the number of teeth in the representation, among other factors, e.g., the amount of compression and the recording format.

53. In regards to Claim 37, Andreiko teaches the following limitations:

37. The method of claim 21, wherein the communicating the digital model further comprises generating an image of the digital model.

Andreiko also teaches the following (see col.12, lines 48-64; and Fig.1, Items 30a, 30b, 30c):

> In such cases, one of the primary functions of the operators 28 is to input digital information 26 from the records 16 into a computer 30a. Another function is to operate the same or another computer 30b to design the custom appliance 25, and to operate NC equipment 38 controlled by one of the same or another computer 30c to manufacture the appliance 25. Where the inputting, design and manufacture are performed at the

appliance facility 13, the computers 30a, 30b and 30c may be the same computer 30.

The communication between computers 30a and 30b therefore comprises

generating an image of the digital model.

54. In regards to Claim 38, Andreiko teaches the following limitations:

38. The method of claim 21, wherein the model comprises at least five teeth.

Examiner finds the number of teeth represented to be a matter of design choice.

55. In regards to Claim 39, Andreiko teaches the following limitations:

39. The method of claim 21, wherein the model comprises at least ten teeth.

Examiner finds the number of teeth represented to be a matter of design choice.

56. In regards to Claim 40, Andreiko teaches the following limitations:

40. The method of claim 21, wherein the model comprises a jaw.

See Andreiko, especially in the Abstract.

57. In regards to Claim 41, Andreiko teaches the following limitations:

41. The method of claim 21, wherein the model comprises gingiva.

See Andreiko, especially in the Abstract.

Conclusion

58. Examiner found that Andreiko does not expressly teach the limitations of dependent claims 16 and 17.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ayal I. Sharon whose telephone number is (571) 272-3714. The examiner can normally be reached on Monday through Thursday, and the first Friday of a biweek, 8:30 am – 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska can be reached at (571) 272-3716.

Any response to this office action should be faxed to (703) 872-9306 or mailed to:

Director of Patents and Trademarks
Washington, DC 20231

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Tech Center 2100 Receptionist, whose telephone number is (571) 272-2100.

Ayal I. Sharon

Art Unit 2123

January 19, 2005

KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER

PETER WONG, DIRECTOR
TECHNOLOGY CENTER 2100